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Melanie L. Brown
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AUG 22 1995

Patent

P. D. File 30-2004 (4690)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Richard R. Hertzog et al.

Filed:

November 3, 1994

Serial No.:

08/333,929

Examiner:

James H. Reamer

Art Unit:

1206

For: DECOMPOSITION OF CUMENE OXIDATION PRODUCT

Honorable Commissioner of

Patents and Trademarks

Washington, DC 20231

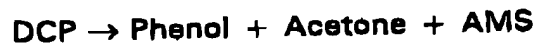
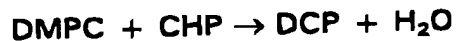
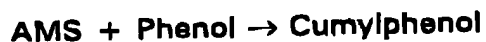
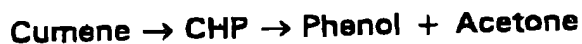
REPLY UNDER 37 CFR § 1.111

This paper is filed in response to the Official Action dated April 3, 1995 and is accompanied by a petition for a two month extension of time. Review and reconsideration on the merits are respectfully requested in view of the following discussion.

Claims 1, 2, 7, and 8 remain and 9-25 are rejected under 35 USC §103 as being unpatentable over U.S. Patent 4,358,618 to Sifniades et al. in combination with U.S. Patent 4,207,264 to Anderson et al. and U.K. Patent 1,202,687 to Barilli et al. Applicants continue to respectfully disagree with the Examiner for the following reasons.

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In their background section, Sifniades et al. teach that cumene is oxidized to cumene hydroperoxide (CHP) which is then subjected to acid-catalyzed cleavage to phenol and acetone. The reference further states that in the presence of acid catalyst, dimethyl phenyl carbinol (DMPC) which is present from the oxidation is dehydrated to alphamethylstyrene (AMS). The reference further states that dimerization of AMS may occur and/or AMS may reaction with phenol to form cumylphenol and that the AMS dimers and cumylphenol are byproducts which have no commercial value (column 1, lines 27-28). The reference further states that DMPC and CHP react to form dicumyl peroxide (DCP) and that DCP may decompose to phenol, acetone, and AMS. These reactions are indicated below:



Sifniades et al. then teach at column 2, lines 19-25 that their process involves decomposing a cumene oxidation product mixture containing CHP and DMPC to produce phenol, acetone, and AMS with reduced byproduct formation. The reference teaches at column 2, lines 44-50:

Thus, the present invention involves intentionally converting a substantial amount of DMPC to DCP in step (a)...

Barilli et al. teach that known processes for the acid decomposition of CHP which utilize sulfuric acid suffer from the drawback of yielding large quantities of cumylphenols and compounds of a pitchy character. Barilli et al. then teach at page 1, lines 30-35:

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The formation of such undesirable side byproducts is believed to be attributable to the condensing and dehydrating action of sulphuric acid. However, the process may be explained, the formation of byproducts leads to a lower phenol and acetone output.

The reference then teaches a process for the acid decomposition of CHP which affords a higher yield of phenol and acetone by producing byproducts in smaller quantities than known processes. The Barilli et al. process involves the addition of acetone to the CHP. Barilli et al. then teach at page 1, lines 63-72:

The process of the invention surprisingly substantially reduces the quantities of cumylphenol and pitch formed, presumably because under the aforesaid conditions the condensing action of sulphuric acid is restrained. This affords the advantages of a higher phenol and acetone yield, and the alphas-methylstyrene formed at the decomposition stage may be recovered at a subsequent stage and recycled after hydrogenation to cumene.

Thus, the secondary reference is teaching that restraining the following condensing reaction:



substantially reduces the formation of cumylphenol and pitch.

The Examiner's proposed modification of the primary reference to include the acetone addition of the secondary reference would destroy the intended function of the Sifniades et al. invention. Because Barilli et al. teach that the acetone addition restrains the reaction of $\text{DMPC} + \text{CHP} \rightarrow \text{DCP}$, Sifniades et al.'s intentional conversion of a substantial amount of DMPC to DCP would be destroyed by the proposed acetone addition. If modification of a reference would defeat the

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intended function or purpose of the reference invention, such modification is not obvious. In re Gordon, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). Thus, Applicants respectfully request that the rejection is improper and request withdrawal thereof.

Respectfully submitted,

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ATTORNEY'S DOCKET NO.:
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AMENDMENT TRANSMITTAL LETTER

SERIAL NUMBER:
08/333,929

FILING DATE:
November 3, 1994

EXAMINER:
James H. Reamer

GROUP ART UNIT:
1206

INVENTION:

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DECOMPOSITION OF CUMENE OXIDATION PRODUCT

AUG 22 1995

INVENTOR(s): Richard R. Hertzog et al.

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Transmitted herewith is an amendment in the above-identified application. The fee has been calculated as shown below.

CLAIMS AS AMENDED

(1)	(2) CLAIMS REMAINING AFTER AMENDMENT	(3)	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) NO. OF EXTRA CLAIMS PRESENT	(6) RATE	(7) ADDITIONAL FEE
TOTAL CLAIMS	21	MINUS	21	0	X \$22	0
INDEP. CLAIMS	8	MINUS	8	8	X \$76	0
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT						\$ 0.00

- * If the entry in column 2 is less than the entry in column 4, write "0" in column 5.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.

- ☐ No additional fee is required.
- ☐ Charge \$ \$ 0.00 to Deposit Account No. . A triplicate copy of this sheet is enclosed.
- ☒ The undersigned petitions for any extension of time for filing this document required under 37 C.F.R. 1.136 and requests that the \$ 370.00 fee be charged to Deposit Account No. 01-1125. A triplicate copy of this sheet is enclosed. (TWO (2) MONTH EXTENSION)

August 22, 1995

Date

Melanie L. Brown

Signature

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(Signature)

Melanie L. Brown

Attorney of Record

August 22, 1995

(Date)

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